

*Application No. 10/524,013*

*Docket No.: 0152-0703PUS1*

*Amendment dated October 16, 2006*

*Reply to Office Action of April 17, 2006*

**AMENDMENTS TO THE DRAWINGS**

Figure 7 has been amended to include the phrase “prior art” as required by the Examiner in the outstanding Office Action. No new matter is being introduced to the application as filed.

A replacement copy of Figure 7 is submitted herewith. The Examiner is respectfully requested to make this replacement sheet part of the record for the above-identified application.

**REMARKS**

Upon entry of the present amendment, claims 1-2 and 4-7 will remain pending in the above-identified application with claims 1-2, 4 and 7 standing ready for further action on the merits and claims 5-6 remaining withdrawn from consideration based upon an earlier Restriction Requirement of the Examiner.

The amendments made herein to the claims do not incorporate new matter into the application as originally filed. For example, the amendment to claim 1 finds support in claim 3, which is now cancelled.

Support for newly added claim 7 is found in claim 2, and in the Example 2 of the specification (*see* page 15, lines 3-10). More particularly, claim 7 is equivalent to claim 2, wherein the lower limit of the V/III ratio is further limited to 0.7.

Accordingly, entry of the instant amendment and allowance of the pending claims is respectfully requested at present.

***Drawings Objection***

The Examiner has indicated that Figure 7 should be designated with a legend such as "Prior Art", and labeled as a Replacement Sheet. Attached hereto is a Replacement sheet for Figure 7, with the legend "Prior Art" indicated thereon as requested by the Examiner.

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*Claim Rejections – 35 USC § 102(b) and 35 USC § 103(a)*

Claims 1-2 have been rejected under the provisions of 35 USC § 102(b) as being anticipated by **Ashizawa et al. EP ‘552** (EP 0 390 552).

Claims 3-4 have been rejected under the provisions of 35 USC § 103(a) as being unpatentable over **Ashizawa et al. EP ‘552**, further in view of **Sasajima et al. EP ‘245** (EP 0 977 245). Reconsideration and withdraw of each of these rejections is respectfully requested based on the following considerations.

*Legal Standard for Determining Anticipation*

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art.” *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

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*Legal Standard for Determining Prima Facie Obviousness*

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

“There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art.” *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

“In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the

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proposed substitution, combination, or other modification.” *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.” *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

***Distinctions Over the Cited Art***

***Ashizawa et al. EP ‘552***

As recited in the amended method claim 1, the present invention now has the added feature wherein the adjustment of carrier (*i.e.*, carbon) concentration in the base layer is controlled by the flow rate of methane halide of a new dopant material.

In the meanwhile, as the Examiner should be aware, Ashizawa et al. EP ‘552 is completely silent on this added point/feature of the present invention (*e.g.*, see page 4, lines 1 to 2 of the

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outstanding Office Action (reproduced below)).

*Ashizawa et al. do not disclose wherein the adjustment of carrier concentration in the base layer is controlled by the flow rate of methane halide.*

This silence in Ashizawa et al. EP '552 is because Ashizawa et al. EP '552 intends to adjust the carrier (*i.e.*, carbon) concentration without using a new dopant material, based on the premise that a suitable dopant material for achieving carbon doping in the MOCVD method has not yet been found (*e.g.*, see column 2, lines 4 to 8 of EP '552 (reproduced below)).

*To reiterate, carbon is an effective p-type impurity used in a GaAs or AlGaAs semiconductor. However, a suitable dopant material for achieving carbon doping in the MOCVD method has not yet been found....*

Indeed, Ashizawa et al. EP '552 also teaches that the new dopant material is not used in the present invention, making it possible to eliminate the memory effect (*e.g.*, see column 5, lines 36 to 38 of EP '552 (reproduced below)).

*...Further, a new dopant material is not used in the present invention, making it possible to eliminate the memory effect....*

Accordingly, it is apparent that Ashizawa et al. EP '552 intentionally avoid using a methane halide of the new dopant material, which is in contrast to what the present invention essentially requires. Thus, Ashizawa et al. do not provide any teaching or suggestion of the above feature of the present invention and instead rather actually teach away from the same. As a result, it is clear that the cited Ashizawa EP '552 reference is incapable of anticipating or rendering obvious any of the instantly pending claims.

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*Sasajima et al. EP '245*

Therefore, in the circumstances noted above, even if Sasajima et al. EP '245 discloses wherein the adjustment of carrier concentration in the base layer is controlled by the flow rate of methane halide, there is no reasonable motivation of combining Sasajima et al. (EP 0977245 A2) and Ashizawa et al. because Ashizawa et al. do not entirely desire the use of methane halide of the new dopant material.

Thus, we do not believe that the above-amended claim 1 is unpatentable over Ashizawa et al. in view of Sasajima et al.

**CONCLUSION**

Based in the amendments and remarks presented herein, the Examiner is respectfully requested to issue a notice of allowance clearly indicating that each of the instantly pending claims is allowed and patentable under Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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